

Abstract

A method of vacuum and pollution-free arsenic extraction, wherein increase the temperature of smelting chamber to 100-300°C and then hold the temperature to remove the vapor and small quantity of dust in the arsenic concentrate; Under residual pressure $\leq 50\text{Pa}$, increase the temperature of smelting chamber and crystallization chamber to 300-500°C and then hold the temperature to remove the volatilized arsenic sulfides; Hold the temperature of crystallization chamber, increase the temperature of smelting chamber to 500-600°C and then hold the temperature to remove the gaseous element sulfur decomposed; Increase the temperature of smelting chamber to 600-760°C and then hold the temperature, lower the crystallization chamber temperature to 270-370°C and then hold the temperature to get element arsenic; shutdown, lower the temperature, charge the air, stripe arsenic product and conduct deslagging, and extract fine gold using conventional method. This invention also provides devices for the above mentioned method, including induction heating equipment, smelting device, constant temperature crystallization device, automatic hydraulic deslagging device, dust collection device, automatic temperature control device, vacuum measuring device and vacuum extraction device. Through large-scale production experiments, this invention completely solves the arsenic pollution and safety problems long existed in the process of arsenic smelting, and simplifies the process.